

III. REMARKS:

The Assignee provides amendments to the claims as presented above and remarks as set out below to address the concerns raised by the office in the official communication sent July 23, 2009. Claims 45, 47-49, 51-64, and 81 are pending. Claims 45, 47-49, and 60 have been amended to highlight aspects of the invention. Particularly, claim 45 has been amended to highlight, among other aspects, use of a pulsed laser and common control as the invention in the particularly demanding situation of sorting sperm cells. Support for these aspects can be found in the specification at least at pages 151, 152, and 156 (*see* potential claims A26-27, B1-3, and D19). Claim 47 has been amended to highlight one particular pulsed laser wavelength parameter that had not been previously achieved with success for the sorting of sperm cells with a pulsed laser and common control, namely, the wavelengths of 350-370 nm. Support can be found in the specification at least at pages 32 and 54. Claim 48 has been amended to highlight particular pulsed laser parameters that facilitate and permit success in this demanding situation listing pulse width, frequency, and power aspects that now allow the sorting of sperms cells with a pulsed laser and common control. Support can be found in the specification at least at pages 46, 72, and 267 (*see* potential claim S2'). Claim 49 has been amended to highlight the particular coefficients of variation that the pulsed laser and common control aspects function with and now allow success in the sorting of sperms cells. Support can be found in the specification at least at pages 75-82. Claim 60 has been amended to present aspects initially provided in claim 49.

As noted above, the assignee has amended both independent and dependent claims to reference a variety of aspects and focus this application on specific features that are not disclosed in or obvious from the cited references. These features each distinguish the invention and present aspects that permit success in the particularly demanding application of sorting sperm cells. As the office may understand, this situation is unlike the sorting of beads or spheres or other cells for a number of reasons. First, sperm cells have not only a non-symmetric shape but they also are often moving live elements that require an immediate and real time adaptation to the situation. Second, these cells are unusually sensitive because their very nature and purpose, namely, that of eventually achieving fertilization is easily compromised. The harsh environments of flow cytometry pressures,

speeds, dilutions, and chemistry combined with laser irradiation and interrogation make this application unlike any other and unique in its successes and failures. As applicable in this situation, it can be seen that none of the Potts, Shapiro, or Piper references disclose or make obvious the aspects now applied or the success achieved.

The Potts and Shapiro references do not anticipate or make obvious a system using a shared pulsed laser beam and common control for success with the sorting of sperm cells. Of course, the Potts reference involves none of the above; it does not involve a pulsed laser, the sorting of sperm cells, or even the type of common control now detailed in the claims. The Potts reference has been cited only for the fact that it involves a database server that collects data from a variety of flow cytometers. As the Potts reference itself shows at paragraph 22 of that reference among other locations, that database server is merely an element that collects resulting data in an Oracle database or the like. It does not control the actual sorting operation and it is unlike the common process control now set forth. Unlike the Potts sharing of data, the present claims set forth a common processor that receives and processes output signals from the respective sensors in a continuous stream in real time and then acts immediately to send control signals to each flow cytometer during sorting to adjust the sorting as a result of the information received at the common processor. This is completely different than the Potts database server and it does not achieve the function or operations now set out. Similarly, the Piper reference was cited only for its disclosure that a pulsed laser has been used in a flow cytometer. Again, this is unlike the present invention as now set forth in the claims. Of course, that Piper disclosure does not involve or make obvious success with the demanding sorting of sperm cells. It involves very different parameters and presents a wholly different irradiation regime than that of the present invention as now set forth in the claims. The Piper reference is at different wavelengths, different pulse widths, and different frequencies at least. Even its general comment of low and high powers is relative only and does not disclose the detailed parameters that make the present invention a success. The Piper reference even acknowledges at page 3 that the application of pulsed laser sources is very different in a flow cytometry situation that requires “a significant change in the approach to the basic physical problem” and had “previously been taken to rule out the use of pulsed lasers for flow cytometry....” This recognition highlights how different and unobvious the invention is in view of the cited references. This recognition is also

applicable in understanding how the Shapiro reference also does not predict a success in this situation. The Shapiro reference was cited for split laser beams, however, it is evident that it did not involve the demanding use in sperms cell sorting, did not involve a pulsed laser, and did not involve a common control, each as now set forth. Even more evident is that it did not involve the pulsed laser parameters now found to facilitate and perhaps even allow success in this demanding type of activity. The Shapiro reference's application is with polystyrene spheres, not the demanding application for sperms cells with their attendant challenges of non-symmetric shapes, moving live activity, immediate real time adaptation to situations, eventual need for fertilization even with the harsh pressures, speeds, dilutions, and chemistry environments of flow cytometry with laser irradiation. This may even be highlighted in the details set forth in claim 49 where the particular coefficients of variation are now achieved. Unlike the ranges used in the present invention, the Shapiro reference even admits that even with its very different type of non-pulsed laser (that, according to Piper, did not require a significant change in approach and had not been previously ruled out for flow cytometry) achieved very different coefficients of variation than are now set out in claim 49. Specifically, the Shapiro reference discloses at page 18 that it (in its very different, less demanding situation with controlled spheres rather than cells) involved coefficients of variation at 4% and other levels. Most importantly, however, it is evident that until the present invention, it was unknown for persons skilled in the art that a shared pulsed laser beam with common sort operational control would work with flow cytometer units for classification of sperms cells. Thus, claim 45 and its dependent claims are novel and non-obvious over the prior art and it is respectfully requested that the examiner allow the present claims at her earliest convenience.

The amendments submitted herein should be understood to be made as a practicality only, and should not to be construed as creating any situation of file wrapper estoppel or the like as all rights are expressly reserved and may be pursued in this or other applications, such as divisionals, continuations, or continuations-in-part if desired. Relatedly, it should be understood that the amendments made herein are made for tangential issues of clarity and as a matter of the Office's convenience or expedience only. The amendments should not be interpreted as an action that in any way surrenders a particular equivalency, surrenders any right to patent coverage, or otherwise limits any rights which the Assignee may now or hereafter assert. It should be understood that, unless and

to the extent deemed broadened by this amendment, and even as amended, the Assignee expressly reserves all rights, including but not limited to: all rights to maintain the scope of literal coverage with respect to any element as may have existed under the language previously presented, all rights to maintain the scope of equivalency coverage as may have existed under the language previously presented, and all rights to re-present the prior language at any time in this or any subsequent application. To the extent currently foreseeable, no change or reduction in direct or equivalency coverage is believed to exist, and no change or reduction in direct or equivalency coverage is intended through the presentation of this amendment.

Further, the office and any third persons interested in potential scope of this or subsequent applications should understand that broader claims may be presented at a later date in this or a continuation in spite of any preliminary amendments, other amendments, claim language, or arguments presented, thus there is not intention to disclaim or surrender any potential subject matter.

It should be understood that such broader claims may require that any relevant prior art that may have been considered may need to be re-visited since it is possible that to the extent any amendments, claim language, or arguments presented in this application are considered as made to avoid such prior art, such reasons may be eliminated by later presented claims or the like. Both the examiner and any person otherwise interested in existing or later coverage or considering the possibility of an indication of disclaimer or surrender of potential coverage, should be aware that no such surrender or disclaimer is intended or exists in this application. Limitations such as arose in *Hakim v. Cannon Avent Group, PLC*, 479 F.3d 1313 (Fed. Cir 2007), or the like are expressly not intended in this or any subsequent matter related.

CONCLUSION

The Assignee has addressed all concerns and respectfully requests an allowance at the examiner's earliest convenience.

Dated this 23rd day of December, 2009.

Respectfully Submitted,
SANTANGELO Law Offices, P.C.

By: /Luke Santangelo/
Luke Santangelo
Attorney for Assignee
PTO Reg. No.: 31,997
125 South Howes, Third Floor
Fort Collins, Colorado 80521
(970) 224-3100